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ATTACHMENT F – FACT SHEET

This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order (Order No. R8-2019-0061). This Fact Sheet is incorporated into and is a part of the Order. If there are inconsistencies between the Fact Sheet and the Order, the provisions within the Order take precedent.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Some sections or subsections of this Order have therefore been identified as “not applicable” to this group of Dischargers. Sections or subsections of this Order not specifically identified as “not applicable” are fully applicable to the Dischargers authorized to discharge wastewater under this Order.

I. BACKGROUND

This Order replaces Order No. R8-2007-0041, NPDES No. CAG918002 as modified by Order No. R8-2009-0045. This Order also replaces Order No. R8-2005-0079, adopted by the Santa Ana Water Board on November 18, 2005.

Order No. R8-2007-0041, adopted by the California Santa Ana Water Board Quality Control Board, Santa Ana Region (Santa Ana Water Board) on March 27, 2009, is a general permit for discharges to surface waters in the Newport Bay Watershed from two categories of discharges:

- Discharges from groundwater dewatering and/or remediation/cleanup operations, and,
- *De minimis* discharges that pose an insignificant threat to water quality.

Order No. R8-2007-0041 was issued as a general permit to facilitate the processing of permit applications for many projects that would otherwise need to be covered under individual waste discharge requirements. It consolidated the requirements of two general permits for discharges within the San Diego Creek/Newport Bay watershed:

- Order No. R8-2007-0008, NPDES No. CAG918001 (General Groundwater Cleanup Permit for Discharges to Surface Waters of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by Petroleum Hydrocarbons, Solvents, Metals and/or Salts), and
- Order No. R8-2004-0021, NPDES No. CAG998001 (General Waste Discharge Requirements for Short-term Groundwater-Related Discharges and *De Minimis* Wastewater Discharges to Surface Waters within the San Diego Creek/Newport Bay Watershed).

Discharges to surface water in the Newport Bay Watershed need to be covered separately because shallow groundwater in the watershed often contains elevated levels of nitrogen, selenium, and dissolved solids. The Santa Ana Water Board has adopted Total Maximum Daily Loads (TMDLs) for nitrogen and selenium in the Newport Bay Watershed. Wasteload allocations (WLAs) specified in these TMDLs must be incorporated into discharge permits.

This Order includes coverage for *de minimis* discharges in addition to groundwater dewatering and cleanup discharges that contain constituents of concern for which TMDLs have been established, and in particular, for selenium and nitrates which are known to occur in the shallow, perched groundwater aquifer that occurs in the freshwater portions of the Newport Bay watershed. *De minimis* discharges are included herein as selenium and nitrate concentrations vary considerably depending on where in the watershed the discharge is occurring, including where within the aquifer the groundwater is being discharged from since selenium concentrations, in particular, and nitrate are highly variable. Therefore, portions of the watershed may lie outside of the area of high selenium and nitrate discharges or within those areas and not exceed the effluent limits established in this order. The *de minimis* discharges regulated under this Order include those resulting from hydrostatic testing of vessels, pipelines, and tanks, from the maintenance of potable water supply pipelines, tanks, and reservoirs, from fire hydrant testing or flushing, non-contact cooling water, air conditioning condensate, and similar types of discharges.

Order No. R8-2007-0041 required compliance with the numeric selenium effluent limitations established in the permit by no later than December 20, 2009. In 2009, the schedule for compliance with the numeric selenium effluent limitations was extended through issuance of Time Schedule Order (TSO) No. R8-2009-0069. The TSO extended the compliance schedule for a maximum of five years from the date of adoption of the TSO or until such time as Order No. R8 2007-0041 was re-issued. Amendments to the TSO in 2013 (Order No. R8-2013-0060) and 2014 (Order No. RB-2014-0025) further extended the TSO expiration date to December 10, 2019, or until such time as Order No. R8-2007-0041 was re-issued to incorporate revised selenium effluent limitations to implement selenium TMDLs that were under development by the Santa Ana Water Board. These TMDLs were adopted by the Santa Ana Water Board in 2017 and approved by USEPA in June 2019.

Discharges from the City of Irvine's groundwater dewatering facilities are currently regulated under Order No. R8-2005-0079 (NPDES No. CA8000406). Two of the City of Irvine's groundwater dewatering facilities (Culver Drive undercrossing and Jeffrey Road undercrossing) discharge to Como Channel. Dry weather flows in the Como Channel are captured by the Peters Canyon Channel Pipeline and Water Reuse Project (Peters Canyon Pipeline) via an in-channel diversion structure located just upstream of Como Channel's confluence with Peter Canyon Channel. The Peters Canyon Pipeline project delivers this water in a pressure pipeline to Orange County Sanitation District for treatment removal of selenium and subsequently discharges to the Orange County Water District's Groundwater Replenishment System (GWRS). Flows from the City of Irvine's third groundwater dewatering facility (Jamboree Road undercrossing) discharge to the El Modena-Irvine Channel which is tributary to the Peters Canyon Channel. The City of Irvine's groundwater discharges will be covered under this Order and Order No. R8-2005-0079 will be rescinded.

Order No. R8-2007-0041 expired on November 1, 2012 but remains in full force and effect until replaced. Twenty-three Dischargers have been authorized to discharge wastewater under Order No. R8-2007-0041; of these, nine are still active.

II. DISCHARGE INFORMATION

The types of wastewater discharges discharged within the Newport Bay watershed regulated under this Order include the following two discharge categories:

De minimis Discharges

- a. Discharges associated with well installation, development, test pumping and purging;
- b. Aquifer testing wastes;
- c. Discharges from potable water supply systems resulting from initial system startup, routine startup, sampling of influent flow, system failures, pressure releases, etc., when compliance with Total Maximum Daily Loads (TMDLs) is not addressed by Order WQ-2014-0194-DWQ;
- d. Discharges resulting from diverted stream flows;
- e. Other similar types of discharges as determined by the Santa Ana Water Board Executive Officer, which may pose a *de minimis* threat to water quality yet must be regulated under waste discharge requirements.

Groundwater Discharges

- a. Dewatering from subterranean seepage and/or associated with protection of new or existing facilities;
- b. Groundwater dewatering at construction sites;
- c. Groundwater cleanup/remediation; and,
- d. Discharges of wastewater effluent associated with testing of selenium and nitrogen treatment technologies and best management practices (BMPs) into surface water.

The following discharges are excluded from regulation under this Order:

- a. Dewatering with pollutants of concern other than those for which effluent limitations are specified in this Order, and;
- b. Discharges from hydro-testing of contaminated pipes, vessels, or tanks.

Groundwater Cleanup and Dewatering Discharges: As noted above, the shallow groundwater zone in the Newport Bay Watershed typically contains elevated levels of nitrogen, selenium, and dissolved solids. In addition, some areas of the groundwater zone in the Newport Bay Watershed have been degraded by industrial waste, fuel and oil wastes, military facility waste, and other pollutants. Contaminants of concern, may include, but are not limited to, the following general categories:

- a. Hydrocarbons, typically those derived from petroleum.
- b. Chemicals that are built on a hydrocarbon “skeleton,” which include –
 - i. Ethers, such as 1,4-dioxane and methyl tert-butyl ether (MTBE);
 - ii. halogenated hydrocarbons, including many classes of chlorinated hydrocarbons used as solvents and pesticides; and
 - iii. per- and polyfluorinated alkyl substances (PFAS).
- c. Classes of biological control agents, beyond chlorinated pesticides, used in agriculture or for other purposes.
- d. Classes of synthetic organic compounds, such as endocrine disruptors and industrial additives.

- e. Metals, with an emphasis on the heavy metals because of their higher toxicity.
- f. Oxyanions, such as nitrate and perchlorate.
- g. Nitroaromatics such as TNT and nitramines such as RDX – essentially organo-nitrogen compounds.

The non-metal COCs, depending on their vapor pressure under a given set of conditions, may be volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), or non-volatile organic compounds (NVOCs).

The major Discharges currently enrolled in Order No. R8-2007-0041 are the City of Irvine, and the Irvine Ranch Water District (IRWD). The City of Irvine operates three dewatering facilities that have averaged a total flow of 56,000 gallons per day (gpd) for the past five years.

IRWD operates a set of wells associated with monitoring and treatment of a contaminated groundwater plume originating from the former Marine Corps Air Station (MCAS) El Toro. These wells have discharged an average of 115,000 gallons per day (gpd) over the past five years. IRWD also discharges flows from a dewatering operation at its Michelson Water Reclamation Plant. These dewatering discharges have averaged 144,000 gpd.

Discharges from Drinking Water Systems: In 2014, the State Water Resources Control Board (State Board) adopted a general order for drinking water system discharges to waters of the United States (Order No. WQ 2014-0194-DWQ). Discharges from drinking water systems that satisfy the TMDL-related eligibility criteria in Order WQ 2014-0194-DWQ and receive authorization to discharge under Order WQ 2014-0194-DWQ are excluded from this Order. One Discharger previously enrolled under Order No. R8-2007-0041, the Golden State Water Company, has terminated its coverage after receiving authorization to enroll under Order No. WQ 2014-0194-DWQ and terminated its coverage under. Another Discharger, IRWD, has enrolled in Order No. WQ 2014-0194-DWQ to cover its potable water discharges, while retaining coverage under R8-2007-0041 for its non-potable water discharges.

De minimis Discharges: The most common treatment required for *de minimis* discharges is settling and/or dechlorination. Settling is used for those discharges with high settleable solids concentration. Discharges with residual chlorine, such as wastewater from hydro-testing of pipes and storage tanks, swimming pool drainage, and development and purging of wells, must be dechlorinated, unless the concentration is depleted by natural processes prior to mixing with the receiving water.

III. APPLICATION FOR COVERAGE UNDER THE GENERAL PERMIT ORDER

A. Existing Dischargers

Existing Dischargers previously authorized to discharge under Order No. R8-2007-0041 or Order No. R8-2005-0079 who wish to continue their discharge(s) and be regulated under the terms and conditions of this Order must complete sections I., II., III., IV., and VIII. of the Notice of Intent (Attachment B) and submit it, no later than 45 days after the effective date of the Order. If no application is submitted by that date, coverage to discharge shall be

terminated and a complete Notice of Intent, with a new application fee, will need to be submitted consistent with Section II.B to resume permit coverage for the discharge.

B. New Dischargers

This Order requires each new Discharger¹ to submit to the Executive Officer a complete Notice of Intent for the proposed discharge at least 45 days before the start of a new discharge. In addition to the basic information on the first page of the NOI form (Attachment B), new Dischargers must include a complete characterization of the proposed discharge, which includes, but is not limited to:

1. Notice of Intent to be covered under the general permit.
2. A list of potential pollutants in the discharge and the anticipated concentration of each pollutant;
3. For groundwater cleanup/remediation projects, a site characterization study that defines the onsite contaminants, their properties, three-dimensional extent and concentration of contaminants in the subsurface, and a description of the geologic and hydrologic factors that control the migration of the contaminants.
4. A fixed hardness value for approval by the Executive Officer of the Santa Ana Water Board based on the 5th percentile of effluent hardness measurements or the average ambient receiving water hardness measurements for those sites polluted with leaded gasoline.
5. A report that shall include the following:
 - a. Chemical analysis of the untreated groundwater. A representative groundwater sample shall be analyzed for organic pollutants using EPA method 8260B, priority pollutants, total recoverable selenium, sulfate, electrical conductivity, total dissolved solids, total suspended solids, total nitrogen, total inorganic nitrogen, and hardness. The selenium analysis used shall assure analytical detection levels sufficient to assess compliance with the effluent limitations of this Order. Test results shall be reported with Minimum levels (ML) and method detection limit (MDL); laboratory analytical limits shall be sufficient to detect these constituents at the concentrations listed in this Order.
 - b. The name of the proposed receiving water body, including the location (Latitude and Longitude) of the discharge point (s);
 - c. The estimated average and maximum daily flow rates, the start date of discharge (if a new discharge), and the duration of the discharge, and the estimated total volume of the discharge;

¹ "New discharger" refers to those proposing to discharge wastewater under Order No. R8-2019-0061 and not currently covered under Order No. R8-2007-0041 and those Dischargers who were covered under Order No R8-2007-0041 or other individual permits (e.g. Order No. R8-2005-0079) and failed to submit an updated NOI by January 20, 2020.

- d. A map showing the path from the point of initial discharge to the ultimate location of discharge;
 - e. A list of known or suspected leaking underground tanks and other facilities or operations that have or may have impacted the quality of the underlying groundwater within the expected radius of influence of the project.
 - f. A discussion of the proposed dewatering and or cleanup project (if appropriate), including a review of the extraction system design and the status of definition of free product and dissolved product plumes for sites contaminated with petroleum hydrocarbon or solvents only (as appropriate);
 - g. A description of the proposed treatment system (if appropriate) and a certification report on the adequacy of each component of the proposed treatment system. This certification report shall contain a requirement-by-requirement analysis, based on accepted engineering practice, of how the process(es) and physical design(s) of the treatment system will ensure compliance with this Order. The design engineer shall affix his/her signature and engineering license number to this certification report. The report(s) shall also certify the following:
 - (1) All treatment facility startup and operation instruction manuals are adequate and available to operating personnel;
 - (2) All treatment facility maintenance and testing schedules are included in the treatment facility operation and maintenance manual (O&M Manual), which shall be kept readily accessible to onsite operating personnel; and
 - (3) Influent and effluent sampling locations and ports are located in areas where samples representative of the waste stream to be monitored can be obtained.
 - h. A discussion of a plan for the prevention of run-on, interception and diversion of runoff, and prevention of infiltration and runoff from contaminated soils stored on-site, if the discharge is associated with a groundwater remediation project and soils containing petroleum projects or other pollutants will be maintained on-site.
 - i. Any information deemed necessary by the Executive Officer.
6. The appropriate filing fee.

IV. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to CWC Chapter 5.5, Division 7 commencing with §13370 and CWA §402 and its implementing regulations adopted by the USEPA. It serves as WDRs pursuant to CWC Article 4, Chapter 4, Division 7 commencing with §13260. This

Order shall also serve as an NPDES permit for the point source discharges described herein to inland surface waters, estuarine, and ocean waters within the Santa Ana Region.

Pursuant to NPDES regulations at 40 Code of Federal Regulations (CFR) §122.28, States may request authority to issue general NPDES permits. On June 8, 1989, the State Board applied to the USEPA requesting revisions to its NPDES Program in accordance with 40 CFR §§122.28, 123.62, and 403.10, including a request to add general permit authority to its approved NPDES Program. On September 22, 1989, the USEPA, Region 9, approved the State Board's request, granting authorization for the State to issue general NPDES permits.

Pursuant to NPDES regulations at 40 CFR §122.28 (a) (2) general permits may regulate point source discharges that:

1. Involve the same or substantially similar types of operations,
2. Discharge the same types of wastes,
3. Require the same effluent limitations,
4. Require the same or similar monitoring, and
5. In the opinion of the Executive Officer, are more appropriately controlled under a general permit than under individual permits.

B. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt waste discharge requirements that serve as an NPDES permit is exempt from the provisions of chapter 3 of CEQA (commencing with section 21100) of division 13 of the Public Resources Code.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The Santa Ana Water Board adopted a Water Quality Control Plan for the Santa Ana River Basin (hereinafter Basin Plan) that became effective on January 24, 1995. The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, State Water Resources Control Board (State Board) Resolution No. 88-63 (Sources of Drinking Water Policy) requires that, with certain exceptions, the Santa Ana Water Board assign the municipal and domestic water supply use to water bodies.

On January 22, 2004, the Santa Ana Water Board adopted Resolution No. R8-2004-0001, amending the Basin Plan to incorporate revised boundaries for groundwater sub-basins, now termed "management zones", new nitrate-nitrogen and total dissolved solids (TDS) objectives for the new management zones, and new nitrogen and TDS management strategies applicable to both surface and ground waters.

The groundwater management zone (GWMZ) in the Newport Bay Watershed consists of a deep regional aquifer (the Irvine GWMZ) overlain by a shallow perched aquifer. The deep aquifer, an important component of the water supply for Orange County, is recharged naturally through infiltration along the flanks of the Santa Ana Mountains, and artificially through actively managed spreading basins along the Santa Ana River. The shallow aquifer is poorly transmissive, restricted in extent, and found largely in the central portion of the watershed in the Tustin Plain. Historically, this aquifer recharged through local vertical infiltration. Surface runoff in the watershed ponded seasonally in the area known as the Swamp of the Frogs, where shallow groundwater seeped to the surface. The quality and hydrology of the shallow groundwater has been altered by anthropogenic activities, beginning in the early part of the 20th century. Irrigated agriculture resulted in leaching of nitrates and other salts to the shallow groundwater. The Swamp of the Frogs was drained, and a network of channels was created to convey wastewater to Upper Newport Bay. A large portion of this wastewater consists of "baseflow" (seepage from shallow groundwater). Although seleniferous bedrock and soils occur naturally in parts of the watershed, the drainage modifications in the watershed have resulted in increased selenium mobility.

Most discharges targeted for coverage by this Order originate from the shallow, perched aquifer described above. This aquifer is not used for municipal water supply. Much of the surface water recharge to this semi-perched zone is ultimately returned to the surface through seepage into flood control channels that are excavated below the shallow groundwater table ("rising groundwater"). San Diego Creek and its tributaries, the Santa Ana-Delhi Channel and its tributaries, and Big Canyon Creek are all excepted from the MUN beneficial use designation.

The existing and potential beneficial uses of surface waters in the Newport Bay Watershed are designated in Chapter 3 of the Basin Plan and are listed in Table 1. This Order implements applicable provisions of the Basin Plan.

2017 Mercury Provisions: In April 2017, the State Water Board adopted Resolution No. 2017-0027, approving an amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries (ISWEBE Plan) in the State of California (mercury provisions). The ISWEBE Plan amendment was approved by USEPA in July 2017. The mercury provisions establish human health and wildlife objectives based on methylmercury concentrations in fish tissue. The mercury provisions include a table of water column concentrations derived from the methylmercury tissue objectives for use in reasonable potential analyses and development of effluent limitations. Regional Water Board staff have determined that the applicable water column concentration from the mercury provisions is 12 nanograms per liter (ng/L) for total mercury. For freshwater this determination is based on the applicability of the 12 ng/L concentration to flowing water bodies (such as creeks and streams), and the applicability of either or both of the wildlife habitat (WILD) or the rare, threatened or endangered species habitat (RARE) to freshwater streams in the Newport Bay Watershed. For saltwater this determination is based on the applicability of the 12 ng/L concentration to waters with tidal mixing (such as upper and lower Newport Bay), and the applicability of one or more of the WILD,

RARE, commercial and sportfishing (COMM), and marine habitat (MAR) beneficial uses to Upper Newport Bay and to Lower Newport Bay. There are currently no tribal-related beneficial uses that have been established in the Newport Bay Watershed.

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Table 1: Basin Plan Beneficial Uses for the Newport Bay Watershed

Receiving Water Name	Beneficial Uses
San Diego Creek and Tributaries	Ground water recharge (GWR) intermittent; water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); and wildlife habitat (WILD). Excepted from municipal and domestic supply (MUN)
Santa Ana-Delhi Channel and Tributaries	Non-contact water recreation (REC-2); warm freshwater habitat (WARM); wildlife habitat (WILD); and rare, threatened, or endangered species (RARE). Excepted from municipal and domestic supply (MUN)
Big Canyon Wash	Water contact recreation (REC-1); Non-contact water recreation (REC-2); warm freshwater habitat (WARM); wildlife habitat (WILD); and rare, threatened, or endangered species (RARE). Excepted from municipal and domestic supply (MUN)
Upper Newport Bay	Water contact recreation (REC-1); non-contact water recreation (REC-2); commercial and sport fishing (COMM); preservation of Biological Habitats of Special Significance (BIOL); wildlife habitat (WILD); rare, threatened, or endangered species (RARE); spawning, reproduction and development (SPWN); marine habitat (MAR); shellfish harvesting (SHEL); and estuarine habitat (EST). Excepted from municipal and domestic supply (MUN)
Lower Newport Bay	Navigation (NAV); water contact recreation (REC-1); non-contact water recreation (REC-2); commercial and sport fishing (COMM); wildlife habitat (WILD); rare, threatened, or endangered species (RARE); spawning, reproduction and development (SPWN); marine habitat (MAR); and shellfish harvesting (SHEL). Excepted from municipal and domestic supply (MUN)
Groundwater	The existing and potential beneficial uses of the Irvine GWMZ designated in Chapter 3 of the Basin Plan are: a. Municipal and Domestic Supply, b. Agricultural Supply, c. Industrial Service Supply, and d. Industrial Process Supply.

- 2. National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992 (see 40 CFR §131.36 et seq., as amended). Approximately forty water quality criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR, which established new criteria for toxics in the

State and incorporated the previously adopted criteria of the NTR (see 40 CFR §131.38 et seq., as amended). The NTR and CTR contain water quality criteria for priority toxic pollutants applicable to inland surface waters and enclosed bays and estuaries of the State.

3. **State Implementation Policy.** On March 2, 2000, the State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Santa Ana Water Board in the Basin Plan. The SIP became effective on May 18, 2000, with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Board adopted amendments to the SIP on February 24, 2005, that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for toxicity control. The requirements of this Order implement the SIP.
4. **Alaska Rule.** On March 30, 2000, at 40 CFR 131.32, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes [65 Fed. Reg. 24641 (April 27, 2000)]. Under the revised regulation (also known as the Alaska Rule), new and revised standards submitted to USEPA after May 30, 2000 must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA before May 30, 2000 may be used for CWA purposes, whether or not approved by USEPA.
5. **Antidegradation Policy.** 40 CFR §131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Board established California's antidegradation policy in State Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Santa Ana Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. Permitted discharges must be consistent with the antidegradation provision of 40 CFR §131.12 and State Board Resolution No. 68-16.

The *de minimis* discharges authorized under this Order are expected to have an insignificant effect on water quality and beneficial uses and therefore conform to applicable antidegradation provisions of NPDES regulations at 40 CFR §131.12 and with State Board Resolution No. 68-16. *De minimis* discharges are, by definition, insignificant threats to water quality and their inclusion in this Order is presumptively expected to not result in a lowering of water quality. Many of the *de minimis* discharges consist of potable water, which has higher water quality than the receiving water.

Discharges from groundwater dewatering remediation/cleanup projects, while meeting water quality standards, may result in a lowering of water quality for some constituents.

Permitting discharges from groundwater remediation/cleanup projects is in the maximum interests of the people of the state because (a) the purpose of these discharges is to improve groundwater quality which will benefit the people of the State; and (b) the degradation is limited in duration to the time necessary to complete the projects.

Permitting discharges from short-term construction-related groundwater dewatering projects and groundwater dewatering facilities is in the maximum interests of the people of the state because the degradation is limited in duration to the time necessary to complete the projects and the facilities are necessary to ensure public safety. The permanent groundwater dewatering facilities regulated by this Order protect the major sewage treatment plant in the watershed as well as road and rail undercrossings.

- 6. Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and 40 C.F.R. §122.44(l) prohibit backsliding in NPDES permits; Pursuant to these anti-backsliding provisions, effluent limitations in a reissued permit must be at least as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. This Order is consistent with applicable anti-backsliding requirements.

Effluent limits in this Order are at least as stringent as in Orders R8-2007-0041 and R8-2005-0079, except with respect to metals where effluent limitations were removed for existing discharges to freshwater based on new monitoring data submitted by the Dischargers.. The effluent limitations for discharges of selenium may, in certain cases, be less stringent than the effluent limitation in Order No, R8-2005-0079 or Order No. R8-2007-0041. The justification for these changes is explained below.

a. Metal Effluent Limits for Discharges to Freshwater:

A reasonable potential analysis using more recent effluent monitoring data from existing Dischargers collected pursuant to the requirements of Order R8-2007-0041 found that for freshwater discharges, effluent limitations were required only for copper and mercury (see Section V.C.3.c). Effluent limitations for arsenic, cadmium, chromium (III), chromium (VI), lead, nickel, silver, and zinc were thus removed.

- b. Selenium Effluent Limits for Freshwater: This Permit implements the WLAs of the Selenium TMDLs for Freshwater in the Newport Bay Watershed for Other NPDES Permittees through imposing effluent limitations based on either (1) the CTR, (2) subwatershed-specific water-column concentrations back-calculated from fish tissue data, or (3) mass-based effluent limits. Compliance options for

these effluent limitations are provided in Section V.A.3 of this Order “Compliance Determination”.

The selenium effluent limitations in Order No. R8-2007-0041 were based solely on the CTR criteria of 5 ug/L. The tissue-based effluent limitations in this Order for the San Diego Creek and Santa Ana Delhi Channel subwatersheds (10 µg/L and 11 µg/L respectively) are less stringent than the CTR while the tissue-based effluent limitation for the Big Canyon subwatershed (1 µg/L) is more stringent than the CTR. These tissue-based effluent limitations are derived largely from a data set of new selenium water and fish tissue concentrations, as well as other related data, that were collected in the Newport Bay Watershed after Order No. R8-2007-0041 was adopted. Tissue-based effluent limitations for selenium are considered to be more appropriate than the CTR when sufficient data are available. Discharges to which the mass-based selenium effluent limitations may be applied are conditional on implementation of approved offset/trading projects that do not result in downstream impacts to beneficial uses.

The Selenium TMDLs explicitly acknowledge that the WLAs may be adjusted over time if new information (information not available at the time of the adoption of the Selenium TMDLs) becomes available and justifies a higher WLA. Adjustment of the WLAs in this manner is consistent with the anti-backsliding provisions of the CWA

Such revisions as well as corresponding revisions to the effluent limitations shall be incorporated in this Order upon approval by the Executive Officer, per delegated authority by the Santa Ana Water Board, unless during the public review process, a request is made to bring the modification before the Santa Ana Water Board for consideration. If brought for consideration by the Santa Ana Water Board, adjustment to the WLAs, as well as corresponding revisions to effluent limitations, shall be incorporated into this Order upon approval

7. **Endangered Species Act.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code §§2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. §§1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act
8. **Monitoring and Reporting Requirements.** CWC §§13267 and 13383 authorize the to require technical and monitoring reports. 40 CFR §122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. The Monitoring and Reporting Program (MRP) establishes monitoring and reporting requirements to implement State and federal requirements. MRP requirements are provided in Attachment E. The specific MRP requirements for an individual discharger, which may include all or a portion of Attachment E, shall be identified within the discharge authorization letter issued by the Santa Ana Water Board

Executive Officer to each individual discharger that seeks coverage under this Order.

D. Impaired Water Bodies on CWA 303(d) List/TMDLs

CWA §303(d) requires states to identify water bodies where water quality standards are not expected to be met after technology-based effluent limitations have been implemented for point sources. For all 303(d)-listed water bodies and pollutants, the Santa Ana Water Board has developed and/or plans to develop total maximum daily loads (TMDLs) that specify waste load allocations (WLA) for point sources and load allocations (LA) for non-point sources. These allocations form the basis, in part, for limitations in waste discharge requirements. TMDLs applicable to the Newport Bay Watershed are discussed below.

1. Nutrient TMDLs

On April 17, 1998, the Santa Ana Water Board adopted Resolution No. 98-9, amending the Basin Plan to incorporate a Nutrient Total Maximum Daily Load (TMDL) for the Newport Bay/San Diego Creek Watershed. The TMDL was amended by Resolution No. 98-100 on October 9, 1998 and thereafter approved by the State Water Resources Control Board, Office of Administrative Law and the USEPA.

2. Selenium TMDLs

In 2017, the Santa Ana Water Board adopted Resolution R8-2017-0014, establishing TMDLs for selenium in freshwater in the Newport Bay Watershed. The selenium TMDLs were approved by the State Board on September 20, 2018 (Resolution No. 2018-0041), by the Office of Administrative Law (OAL) on April 19, 2019, and by the USEPA on June 20, 2019. The selenium TMDLs apply to the following three freshwater subwatersheds of the Newport Bay Watershed:

- Santa Ana Delhi Channel Subwatershed
- San Diego Creek Subwatershed
- Big Canyon Wash Subwatershed

The selenium TMDLs established wasteload allocations (WLAs) for permitted groundwater dewatering, treatment or other similar operations discharging to freshwaters in the San Diego Creek, Santa Ana Delhi, and Big Canyon subwatersheds of the Newport Bay Watershed. The selenium TMDLs also specified several options for demonstrating compliance with the selenium WLAs that were intended to be explicitly incorporated into applicable permits. The incorporation of these WLAs into Order No. R8-2019-0061 is discussed in Section V below.

The 2017 selenium TMDLs replace selenium TMDLs established by USEPA in 2002. The 2017 TMDLs do not include WLAs for Upper and Lower Newport Bay. In addition, the most recent update of the CWA §303(d) list for the Santa Ana Region (the 2016 update) does not include selenium listings for either Upper or Lower Newport Bay.

The Santa Ana Water Board incorporated selenium effluent limitations for groundwater-related discharges beginning with Order No. R8-2004-0021. Stakeholders in the Newport Bay Watershed, concerned about achieving compliance with the CTR criteria for selenium, formed a voluntary program known as the Nitrogen and Selenium Management Program (NSMP), sponsored by a Working Group. The Working Group implemented a Work Plan that recommend revisions to the USEPA selenium TMDLs, to develop treatment technologies, and to participate in developing site-specific selenium objectives for the Newport Bay watershed. Order No. R8-2004-0021 included requirements that reflected the proposed NSMP Working Group approach and required implementation of a Work Plan to accomplish those specific tasks.

Order No. R8-2004-0021 provided that participation by dischargers in the NSMP Working Group and implementation of the approved Work Plan would constitute interim, performance-based limitations. The Order also allowed dischargers who did not wish to participate in the NSMP Working Group to implement a program approved by the Executive Officer to offset their selenium discharges.

Order No. R8-2007-0041 included the compliance options specified in Order No. R8-2004-0021 and required compliance with the numeric selenium limitations established in the permit by no later than December 20, 2009. In 2009, this compliance date was extended through issuance of Time Schedule Order (TSO) No. R8-2009-0069. The TSO extended the schedule for compliance for a maximum of five years from the date of adoption of the TSO or until such time as Order No. R8 2007-0041 was re-issued. Amendments to the TSO in 2013 (Order No. R8-2013-0060) and 2014 (Order No. RB-2014-0025) extended the TSO expiration date to December 10, 2019, or until such time as Order No. R8-2007-0041 was re-issued to incorporate revised selenium effluent limitations based on new selenium TMDLs adopted by the Santa Ana Water Board.

The WLAs in the 2017 selenium TMDLs include compliance options similar to those used in Order No. R8-2007-004.

The NSMP Working Group effort has resulted in specific recommendations for the development of site-specific objectives (SSOs) for selenium that, when fully approved, will replace the CTR-based selenium objectives in the Newport Bay watershed. These SSOs are reflected in the 2017 selenium TMDLs. The Working Group has prepared a draft BMP Strategic Plan that outlines the steps proposed to further address selenium BMP evaluation and implementation of the 2017 selenium TMDLs. Implementation of the BMP Strategic Plan is expected to result in compliance with the WLAs in the selenium TMDLs.

As the NSMP Working Group is no longer in existence, dischargers opting to comply with the selenium TMDLs via the BMP Strategic Plan will be collectively referred to as the “BMP Strategic Plan Implementation Group.”

3. Organochlorine TMDLs

On June 14, 2002, USEPA Region 9 established TMDLs for fourteen toxic pollutants, including five organochlorine compounds, for San Diego Creek, Upper and Lower Newport Bay, and Rhine Channel. The organochlorine (OC) compounds included four legacy pesticides (1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane [DDT], chlordane, dieldrin and toxaphene) and polychlorinated biphenyls (PCBs). TMDLs were established for chlordane, total DDT, and total PCBs in all these waterbodies; dieldrin TMDLs were established for San Diego Creek, Lower Newport Bay, and Rhine Channel; and a TMDL for toxaphene was established only for San Diego Creek (USEPA, 2002).

The most recent water quality assessment performed for the 2016 update of the CWA §303(d) list resulted in listings for total DDT and toxaphene in San Diego Creek, and total DDT, chlordane and PCBs in Upper and Lower Newport Bay.

On July 15, 2011, the Santa Ana Water Board adopted a Basin Plan amendment to incorporate TMDLs for total DDT and toxaphene in San Diego Creek and total DDT, chlordane and total PCBs for Upper and Lower Newport Bay. Informational TMDLs were also adopted for chlordane and total PCBs in San Diego Creek. These TMDLs were approved by the State Water Board on October 16, 2012, and by USEPA on November 12, 2013.

The organochlorine compounds TMDLs include numeric targets based on the CTR ambient water quality criteria. However, the 2011 Organochlorine Compounds TMDLs did not assign WLAs to groundwater discharges. Organochlorine pollutants tend to tightly sorb to soil organic matter and are rarely found in groundwater. There is thus no reasonable potential that discharges regulated by this Order will contain organochlorine compounds. Therefore, this Order does not include effluent limitations or monitoring for organochlorine compounds.

4. Metals TMDLs.

In 2002, USEPA established TMDLs for copper, lead, zinc, and cadmium in the Upper Bay, and copper, lead and zinc in the Lower Bay based on an impairment assessment conducted by USEPA staff (Total Maximum Daily Loads for Toxic Pollutants; San Diego Creek and Newport Bay, California. USEPA Region 9, June 14, 2002). USEPA also established cadmium, copper, lead, and zinc TMDLs for San Diego Creek. Cadmium, copper, lead, and zinc are known to bioaccumulate in benthic organisms, but do not generally bio-magnify up the food chain.

In 2006, the State Board assessed individual metals in Newport Bay and listed the Upper and Lower Bay for copper on the 303(d) list of Impaired Waters. No other individual metals were listed based on the State Board assessment, although USEPA's 2002 TMDLs remain in place. The State Board assessment also demonstrated no metals impairment in San Diego Creek.

The Impairment Assessment conducted by Santa Ana Water Board staff, based on data collected after 2002, showed that Upper and Lower Newport Bay are still impaired for dissolved copper in water based on exceedances of the CTR criterion (3.1µg/L).

The Santa Ana Water Board is currently finalizing draft copper TMDLs to address the copper impairment in Newport Bay. When fully approved, these copper TMDLs will replace the TMDLs established by USEPA in 2002.

The Santa Ana Water Board's draft TMDLs identify copper antifouling paints as the largest sources of copper to the Bay and are six times higher than the second largest source which is runoff from the major tributaries. Neither the USEPA's 2002 metals TMDLs, nor the Santa Ana Water Board's draft copper TMDLs include WLAs for NPDES permits regulating groundwater discharges.

Newport Bay and San Diego Creek were first placed on the CWA §303(d) list for the general category "metals" in 1992. Individual metals were not listed. In 2002, USEPA established TMDLs for cadmium, copper, lead, and zinc in San Diego Creek and in Upper Newport Bay. USEPA also established TMDLs for copper, lead, and zinc in Lower Newport Bay. The State Water Board subsequently decided to remove general listings for "metals" from the CWA §303(d) list and replace them with specific pollutants when warranted. The State Board assessed available metals data in San Diego Creek and Newport Bay for the 2006 update of the CWA §303(d) list and did not find enough evidence to list any individual metals aside from copper in Upper and Lower Newport Bay. The USEPA copper TMDLs for Newport Bay does not specify wasteload allocations for groundwater discharges. The CWA §303(d) list was approved by USEPA on June 28, 2007. The most recent update of the CWA §303(d) list for the Santa Ana Region (the 2016 update) did not add new metal listings for the Newport Bay Watershed. The 2016 update was approved by the Santa Ana Water Board in April 2017, by the State Water Board in September 2017, and by USEPA in April 2019.

E. Other Plans, Policies and Regulations

In most areas of the Newport Bay Watershed, there is no significant amount of receiving water at the point of discharge. Therefore, no mixing zone allowance is included in the calculation of effluent limits. Consequently, compliance with the effluent limits is required to be determined at the end of the discharge pipe or at a location prior to where the discharge enters the receiving water, or at a predetermined location within the receiving water,

V. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE PROHIBITIONS

The CWA requires point source Dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR §122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR §122.44(d) requires that permits

include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water.

A. Discharge Prohibition

The discharge prohibitions are based on the CWA, Basin Plan, State Water Resources Control Board's plans and policies, USEPA guidance and regulations, and previous permit provisions, and are consistent with the requirements set for other discharges regulated by waste discharge requirements adopted by the Santa Ana Water Board.

B. Technology-Based Effluent Limitations

1. Scope and Authority

CWA §301 (b) and 40 CFR §122.44 require permits to, at a minimum, meet applicable technology-based requirements and any more stringent effluent limitations necessary to meet applicable water quality standards. The CWA requires the USEPA to develop effluent limitations, guidelines and standards (Effluent Limitations Guidelines - ELGs) representing application of best practicable treatment control technology (BPT), best available technology economically achievable (BAT), best conventional pollutant control technology (BCT), and best available demonstrated control technology for new sources (NSPS), for specific industrial categories. Where USEPA has not yet developed ELGs for a particular industry or a particular pollutant, CWA §402 (a) (1) and 40 CFR §125.3 authorize the use of best professional judgment (BPJ) to derive technology-based effluent limitations on a case-by-case basis. When BPJ is used, the permit writer must consider specific factors outlined at 40 CFR §125.3.

2. Applicable Technology-Based Effluent Limitations

This Order includes effluent limitations for total petroleum hydrocarbons, suspended solids, and sulfides that are based on best professional judgment. The limitations were established when the first general *de minimis* discharge order, Order No. 93-49, was adopted by the Santa Ana Water Board in 1993 and have been carried forward in all subsequent general orders. This Order also establishes technology-based effluent limitations for chlorinated hydrocarbons.

TPH: The 0.1 mg/L limit for total petroleum hydrocarbons is intended to be an indicator parameter to demonstrate that groundwater dewatering operations are not intercepting hydrocarbon plumes. Exceedances of this limit will require treatment prior to discharge.

TSS: The suspended solids limit of 75 mg/L is based on values that have been proven to be achievable in the field through the use of settling devices such as Baker Tanks, retention basins, etc.

Sulfides: Some dewatering operations, especially along the coast where ocean/bay sediments have been used to construct land masses, have encountered

groundwater containing high concentrations of hydrogen sulfide. When discharged, the sulfides are released to the atmosphere and have created odor nuisances. It has been found that the discharge of waters with less than 0.4 mg/L of sulfides should not cause such odor conditions. This level is easily achievable with current technology (usually chlorination).

Chlorinated Hydrocarbons: Effluent limitation guidelines for chlorinated hydrocarbons have not been developed for the category of Dischargers authorized to discharge by this Order. However, since authorized Dischargers are discharging treated wastewaters, it is appropriate to establish technology-based effluent limitations using Best Professional Judgment (BPJ) for chlorinated hydrocarbons.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

CWA §301(b) and 40 CFR §122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

40 CFR §122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA §304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR §122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

The effluent limits that apply to the Discharger shall be identified within the discharge authorization letter issued by the Regional Board Executive Officer.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

a. Beneficial Uses

The receiving waters for discharges authorized by this Order are listed in Table 1 of this Fact Sheet (Section IV.C) along with their beneficial use designations. As shown in Table 1, all waters that may receive discharges authorized by this Order are excepted from the MUN beneficial use designation.

b. Basin Plan Water Quality Objectives

The Basin Plan contains a numeric water quality objective for total residual chlorine that is applicable to all inland surface waters and enclosed bays and estuaries.

The Basin Plan also contains numeric water quality objectives specific to San Diego Creek for TDS and for total inorganic nitrogen (TIN) (Table 2).

Table 2: Basin Plan Numeric Water Quality Objectives for San Diego Creek

Numeric Water Quality Objective	Reach 1 (below Jeffrey Road)	Reach 2 (above Jeffrey Road to Headwaters)
pH	$6.5 \leq \text{pH} \leq 8.5$	$6.5 \leq \text{pH} \leq 8.5$
TDS (mg/L)	1,500	720
Total Inorganic Nitrogen (mg/L)	13	5

c. Nutrient TMDL Wasteload Allocations

The nutrient TMDL establishes numeric targets that are based on a 50% reduction in nitrogen loading to Newport Bay and its freshwater tributaries. The TMDL requires that the 50% reduction be achieved no later than December 31, 2007 for summer loading (between April 1 and September 30); the 50% reduction in winter inputs (between October 1 and March 31) is to be achieved no later than December 31, 2012.

The nutrient TMDL includes nitrogen wasteload allocations for “undefined sources.” These which include rising groundwater, discharges associated with groundwater cleanup and dewatering, atmospheric deposition, open space inputs and in-bay sediment nitrogen. The load allocations for undefined sources require a 50% reduction in summer inputs by 2007, and a 50% reduction in winter inputs by 2012. These reductions have been achieved.

The Nutrient TMDL implementation plan supports the trading of pollutant allocations, where appropriate, as a potentially cost-effective method to achieve pollutant reduction. Stakeholders in the Newport Bay Watershed previously formed a voluntary program known as the Nitrogen and Selenium Management Program (NSMP), sponsored by a Working Group to address the requirements of Order No. R8-2007-0041. The Working Group funded a Work Plan that identified nutrient offset, trading or mitigation projects. Although the NSMP Working Group has disbanded, the nitrogen offset programs identified by the Working Group provide viable options for complying with this Order.

d. Selenium TMDL Wasteload Allocations

As described above, in 2017 the Santa Ana Water Board adopted TMDLs for selenium in three freshwater subwatersheds of the Newport Bay Watershed. These TMDLs were approved by USEPA in 2019 and the selenium TMDL is included in Chapter 6 of the Basin Plan in Table 4.c.Se.1 and Table 4.c.Se.2.

The selenium effluent limits in this Order are based on the wasteload allocations specified in the selenium TMDLs. These wasteload allocations are reproduced below (using the exact text in the Basin Plan) as Table 3.

Table 3: Final WLAs as a Semi-Annual Arithmetic Mean¹ (for Implementation Purposes)

WLAs	Tissue-based Water Column WLAs 2,3,4,5,6,7,8 (Based upon Biodynamic Model) (µg Se/L)			CTR-based Water Column WLAs 2,8,14,16 (µg Se/L)	Conditional Mass-based WLAs 15,16 (lbs)
	San Diego Creek Subwatershed 9,12,13,16	Santa Ana-Delhi Channel 10,12,13,16	Big Canyon Wash Subwatershed 11,12,13,16		
MS4 Permittees					Optional. Applies when discharger meets the following conditions: participates in approved Offset and Trading Program Offsets entirety of discharge (concentration x flow), including any specified offset ratio
Other NPDES Permittees	10	11	1	5	

(1) Semi-annual arithmetic mean: April 1 through September 30 and October 1 through March 31.

(2) Allocations apply year-round during non-wet weather (i.e. dry) conditions. Wet weather conditions are any day with 0.1 inches of rain or more, as measured at the Tustin-Irvine Ranch Rain Gauge Station, and the following three days (72 hours).

(3) The tissue-based WLAs are based on probable water column concentrations derived from the biodynamic model, as detailed in the Linkage Analysis of these selenium TMDLs. The biodynamic model is directly incorporated herein to these WLAs and is represented by the following equations:

(1) Fish tissue target of 8.1 or 5 µg Se/g dw (piscivorous fish): $C_{water} (\mu g \text{ Se/L}) = [((C_{fish \text{ target}} / TTF_{piscivorous \text{ fish}}) / TTF_{invertivorous \text{ fish}}) / TTF_{invertebrate}) / K_d] * 1000$;

(2) Fish tissue target of 8.1 or 5 µg Se/g dw (invertivorous fish): $C_{water} (\mu g \text{ Se/L}) = [((C_{fish \text{ target}} / TTF_{invertivorous \text{ fish}}) / TTF_{invertebrate}) / K_d] * 1000$;

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(3) Fish tissue target of 8.1 or 5 µg Se/g dw (detritivorous fish): $C_{\text{water}} (\mu\text{g Se/L}) = [(C_{\text{fish target}} / \text{TTF}_{\text{detritivorous fish}}) / K_d] * 1000$;

(4) Bird egg target of 8.0 µg Se/g dw (piscivorous bird): $C_{\text{water}} (\mu\text{g Se/L}) = [(((C_{\text{bird target}} / \text{TTF}_{\text{bird}}) / \text{TTF}_{\text{invertivorous fish}}) / \text{TTF}_{\text{invertebrate}}) / K_d] * 1000$;

(5) Bird egg target of 8.0 µg Se/g dw (invertivorous bird): $C_{\text{water}} (\mu\text{g Se/L}) = [(((C_{\text{bird target}} / \text{TTF}_{\text{bird}}) / \text{TTF}_{\text{invertebrate}})) / K_d] * 1000$

(4) TTF_{bird} = trophic transfer factor from fish or invertebrates to bird egg, $\text{TTF}_{\text{piscivorous fish}}$ = trophic transfer factor from small fish to predatory fish, $\text{TTF}_{\text{invertivorous fish}}$ = trophic transfer factor from invertebrates to fish, $\text{TTF}_{\text{detritivorous fish}}$ = trophic transfer factor from particulates to fish, $\text{TTF}_{\text{invertebrate}}$ = trophic transfer factor from particulates to invertebrates, K_d = partitioning coefficient from dissolved selenium in water to particulates.

(5) Initial values for all TTFs and K_d s are specified in the Linkage Analysis of these selenium TMDLs. TTF values may vary by specific water body. In water bodies where predatory fish are not present, the $\text{TTF}_{\text{predatory fish}}$ value should equal 1 to represent that one less step is occurring in the food chain.

(6) During the development of the selenium TMDLs, a range of probable water column concentrations was derived from the tissue-based numeric targets, based on the values assumed for the variables in the equation. The initial WLA values selected are based upon consideration of the most sensitive endpoint in the watershed and existing tissue data. During Phase I of these selenium TMDLs, that endpoint has been identified as fish tissue for the protection of fish (numeric target of 8.1 µg Se/g dw) for the SDC and SADC subwatersheds and as bird egg tissue for the protection of birds (8.0 µg Se/g dw) in BCW.

(7) During the TMDL Reconsideration and during Phase II of these selenium TMDLs, the biodynamic model inputs and resulting probable water column concentrations will be reevaluated and updated as necessary and per the schedule included in **Table 4.c.**

Se.2. Subject to review and written comment via a public participation process, if updates are determined to be appropriate, such revised values will then replace the initial values in the biodynamic model equations, resulting in revised allocations. Such revisions can be made via approval by the Executive Officer, per delegated authority by the Santa Ana Water Board, unless during the public review process a request is made to bring the modification before the Santa Ana Water Board for consideration.

(8) The final allocations are to be achieved as soon as possible, but no later than 30 years from the effective date of the reconsidered TMDLs, as discussed in the Implementation Plan.

(9) Assessed in the receiving water at San Diego Creek at Campus Drive for Regulated Parties (as defined in the Implementation Plan other than MS4 Permittees) that opt to implement a BMP Strategic Plan consistent with the Implementation Plan.

(10) Assessed in the receiving water at Santa Ana-Delhi Channel at Irvine Avenue for Regulated Parties (as defined in the Implementation Plan other than MS4 Permittees) that opt to implement a BMP Strategic Plan consistent with the Implementation Plan.

(11) Assessed in the receiving water at Big Canyon Wash at Back Bay Drive for Regulated Parties (as defined in the Implementation Plan other than MS4 Permittees) that opt to implement a BMP Strategic Plan consistent with the Implementation Plan.

(12) Assessed at 'end of pipe' for Individual Action Plan point sources that elect not to pursue an offset. Compliance with allocations will be determined pursuant to the compliance options outlined under the heading "Compliance with WLAs". Such

compliance options are directly incorporated herein as part of the assumptions and requirements of these WLAs.

(13) Assessment location for the MS4 permittees (urban runoff) is the Costa Mesa Channel. This location was selected as a surrogate urban runoff site because the subwatershed is approximately 1 square mile in area, it has predominantly urban land uses, and it is outside of the areas impacted by rising groundwater.

(14) The CTR-based water column WLAs will no longer apply to these selenium TMDLs if and when revised objectives (e.g., SSOs) have been approved and are in effect and the current CTR chronic criterion for selenium in freshwater is de-promulgated.

(15) The Offset and Trading Program and any applicable offset ratios, described in the Implementation Plan, is incorporated herein to these conditional mass-based WLAs.

(16) Compliance with allocations will be determined pursuant to the compliance options outlined under the heading "Compliance with WLAs". Such compliance options are directly incorporated herein as part of the assumptions and requirements of these WLAs.

The TMDL describes groundwater as the predominant source of selenium in the Newport Bay watershed, entering surface waters either through point source discharges (e.g., dewatering operations) or more commonly through non-point source (NPS) rising groundwater.

The selenium TMDLs established the selenium loading capacities for the freshwater waterbodies in the Newport Bay Watershed based on:

- 1) the water column concentration specified in the CTR, and
- 2) the water column concentrations predicted from the tissue-based numeric targets in the selenium TMDL.

The derivation of the predicted water column concentrations is described in the Linkage Analysis of the selenium TMDLs.

If and when revised selenium objectives (e.g., Site-Specific Objectives [SSOs]) are established, and the current CTR criterion is depromulgated for the Newport Bay watershed, the CTR water column-based loading capacities will no longer be in effect for these selenium TMDLs.

As there is inherent uncertainty with any model, including the biodynamic model, the actual water column concentrations at which the tissue-based targets are attained may differ from the predicted concentrations derived in the Linkage Analysis. Therefore, once the tissue-based numeric targets are attained, the tissue-based loading capacity/TMDL is equivalent to the water column concentrations that achieve those tissue-based concentrations.

Protection of beneficial uses requires consideration of both the periods of highest selenium exposure (dry weather flows) and the periods of greatest potential harm to the beneficial uses (breeding season and periods of embryonic and/or juvenile development). Dry weather conditions with flows occur year-round, and therefore, present potential periods of high selenium exposure all year. The period of potential greatest harm due to selenium exposure occurs seasonally

(spring and early summer). As a result, consideration of seasonal variations could result in the development of different allocations for different periods of the year or the application of the allocations only during the breeding season. However, to ensure protection of beneficial uses both during the sensitive period and from the higher selenium concentrations that occur during dry weather, a year-round application of the TMDLs and allocations during dry weather conditions is the most protective approach.

Further, to evaluate the influence of seasonality and to provide the most protective assessment of beneficial uses, an averaging period for the WLAs and LAs is appropriate. Averaging periods for the allocations are based on the potential impacts from selenium exposure and variability in observed receiving water data. Since the protection of beneficial uses is linked to chronic not acute selenium conditions, a semi-annual averaging period utilizing an arithmetic mean is appropriate for these TMDLs and allocations. The semi-annual averaging periods are defined as April 1 through September 30 and October 1 through March 31 each year.²

○ **Phase II of these Selenium TMDLs: Selection of Protective Water Column Concentrations.** During TMDL reconsideration, water column concentrations will be re-evaluated to determine if adjustments to the allocations are necessary to attain the tissue-based numeric targets (and CTR water column-based targets, to the extent they remain in effect) during Phase II of these selenium TMDLs. This evaluation will likely entail running the biodynamic model with new data that have been collected through Phase I. The re-evaluation will include an assessment of additional tissue data collected pursuant to the required monitoring program for these selenium TMDLs to assess progress toward achieving the targets and to reassess the most sensitive endpoint for the selection of appropriate allocations.

Further, during the implementation of Phase II, a more robust process to periodically reassess the allocations will be implemented by the Santa Ana Water Board. During this process, allocations will be adjusted, as needed, over time to result in attainment of the tissue-based targets.

This approach, as well as the rationale for the approach, is the same as that described above for Phase I of these selenium TMDLs.

² Note that this averaging period specifically applies to the concentration-based WLAs and LAs. As specifically noted in these selenium TMDLs, where the tissue-based numeric targets are attained, the WLAs/LAs shall be deemed to be attained. In evaluating the tissue-based numeric targets, an annual averaging period is more appropriate since bird eggs are only available during a very limited time of the year, and fish tissue and other biota should also be collected during the same timeframe that the birds are breeding since they constitute a likely source of selenium input. Because selenium concentrations in fish and bird egg tissue are expected to be much more variable than those in water, a geometric mean statistical approach should be employed for evaluating tissue data.

- **CTR Water Column-Based WLAs and LAs.** Until tissue-based objectives are approved, the CTR chronic criterion for selenium in freshwater must serve as the final numeric target for selenium for the freshwater areas in the Newport Bay watershed. As a result, water column-based allocations based on the CTR are also included in these selenium TMDLs. However, the CTR water column-based allocations will no longer be in effect if, and when the CTR freshwater criterion has been replaced by revised objectives (e.g., SSOs).
- **Conditional Mass-Based WLAs.** Recognizing the lack of reasonable and feasible BMPs in the watershed, and that allowing certain discharges to be offset rather than prohibited may provide a greater net environmental benefit, conditional mass-based WLAs are included as an alternative to the concentration-based WLAs. As a requirement of the offset and trading program, discharges allowed pursuant to the offset and trading program cannot result in downstream impacts. Therefore, these conditional mass-based WLAs will result in attainment of the loading capacity and thereby attainment of the selenium TMDLs.
- **Attainment of Tissue-Based Numeric Targets.** While the tissue-based water column WLAs and LAs are expected to result in attainment of the tissue-based numeric targets, bioaccumulation in the various foodwebs in the watershed may be different than what was modeled with the biodynamic model as part of the Linkage Analysis. Therefore, where tissue-based numeric targets are attained, the corresponding WLAs/LAs will also be deemed to be attained, regardless of the actual measured water column concentration. This approach emphasizes that the water column concentrations are only surrogate measures, while the tissue-based targets provide for the direct assessment and protection of beneficial uses.
- **Direct Incorporation of the Biodynamic Model into the Tissue-Based WLAs and LAs.** The biodynamic model is directly incorporated into the tissue-based WLAs and LAs. As many assumptions and factors were utilized in developing the initial allocations, future data may warrant revising these assumptions and factors, thereby modifying the allocations. By incorporating the model directly into the allocations, it becomes part of the assumptions and requirements of the allocations and can be modified by the Santa Ana Water Board³ without necessitating a Basin Plan Amendment. Any such modification to the allocations will be subject to a public review process. However, if future data indicate that a revised modeling approach is warranted (e.g., a bioaccumulation factor (BAF) approach in lieu of the biodynamic model), such a revision would necessitate a Basin Plan Amendment.
- **Assignment of WLAs and LAs at the Subwatershed Scale.** As the selenium TMDLs are based upon a determination of impairment for three subwatersheds (San Diego Creek, Santa Ana-Delhi Channel, and Big Canyon

³ *Per the Regional Water Board's delegation of authority, the Executive Officer may approve such modifications, subject to a public review and comment process. Upon request, such modifications may be considered directly by the Regional Water Board.*

Wash), corresponding WLAs and LAs are also established for each subwatershed. While the San Diego Creek subwatershed contains various areas, the water column concentration selected for the WLAs is based upon the Lower San Diego Creek analysis in the Linkage Analysis. Attainment of the allocations in Lower San Diego Creek is expected to result in reductions in both the San Joaquin Marsh Reserve (UCI Wetlands) and the IRWD Constructed Treatment Wetlands such that the tissue targets will be achieved; therefore, no separate allocations for these areas are established at this time.

- **Compliance Options.** To aid in ensuring permitting consistency with the intent of these selenium TMDLs, the WLAs include compliance options as part of the assumptions and requirements of the WLAs.

Options for complying with the selenium WLAs are specified in the TMDLs and are included in this Order. These options include development of a BMP Strategic Plan and/or and Offset and Trading Plan. The specifications for these plans are described in the selenium TMDLs and included in the Provisions of this Order.

e. SIP, CTR, and NTR

The California Toxics Rule specifies aquatic life numeric criteria for 23 priority toxic pollutants and numeric human health criteria for 57 priority toxic pollutants. These criteria apply to inland surface waters and enclosed bays and estuaries within the Santa Ana Region.

The SIP specifies procedures for implementing the CTR criteria. The procedures include those used to conduct reasonable potential analysis to determine the need for effluent limitations for priority and non-priority pollutants.

CTR criteria for the organic compounds benzene, toluene, carbon tetrachloride, dichlorobromomethane, tetrachloroethylene, trichloroethylene and 1,1-dichloroethylene were considered, but the CTR was only used as an effluent limit for 1,1-dichloroethylene. More stringent applicable standards were used as effluent limits for the other six organic compounds),

Effluent limits for selenium are based on the CTR's aquatic life criteria for selenium, however, as discussed below in Section V.C.3.d, this Order specifies that compliance with the selenium effluent limits will be based on compliance options that are listed in the selenium TMDLs.

Effluent limits for discharges to freshwater based on the CTR metal criteria are included in this Order. Two sets of effluent limits were developed: one set applicable to existing discharges, and a second set applicable to new dischargers with insufficient data to develop effluent limits specific to their discharges.

f. Division of Drinking Water Maximum Contaminant Levels

Effluent limits for benzene, carbon tetrachloride, methyl tertiary butyl ether (MTBE), tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1-dichloroethane, cis-1,2- dichloroethylene, trans-1,2-dichloroethylene, , and 1,2,3-trichloropropane (TCP) are based on Maximum Contaminant Levels (MCLs) from the State Board's Division of Drinking Water.

3. Determining the Need for WQBELs

NPDES regulations at 40 CFR 122.44(d)(1)(i) require permits to include WQBELs for all pollutants (non-priority or priority) "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any narrative or numeric criteria within a State water quality standard" (have Reasonable Potential). Thus, assessing whether a pollutant has Reasonable Potential is the fundamental step in determining whether or not a WQBEL is required.

a. Non-Priority Pollutants

i. Chlorine Residual

This Order includes an effluent limit of 0.1 mg/L limit for total residual chlorine based on the numeric water quality objective established in the Basin Plan.

ii. Total Dissolved Substances

This Order includes effluent limits for TDS based on Basin Plan numeric water quality objectives established for Reaches 1 and 2 of San Diego Creek (Table 2).

iii. Total Inorganic Nitrogen

This Order implements relevant requirements of the Nutrient TMDL by specifying a TIN effluent limit of 1 mg/L for groundwater dewatering discharges when the TIN concentration in the effluent exceeds 1 mg/L. Dischargers may comply with this requirement by implementing a nitrogen offset project, such as participation in the diversion and treatment of San Diego Creek flows in the IRWD constructed wetlands in the San Joaquin Freshwater Marsh, diversion of high-nitrogen flows to the sanitary sewer, , and/or by implementing other nitrogen management strategies.

For non-groundwater discharges to San Diego Creek, this Order also includes TIN effluent limits based on the Basin Plan numeric water quality objectives established for San Diego Creek (Table 2).

b. Priority Pollutants

The SIP establishes implementation procedures for priority pollutant criteria promulgated by USEPA through the NTR and the CTR, and for priority pollutant objectives established in Basin Plans.

The SIP specifies procedures to (1) determine which priority pollutants require effluent limits, and (2) calculate effluent limits for those pollutants that have been identified as needing effluent limits.

The need for effluent limits (referred to as a “reasonable potential analysis” or RPA) is determined based on assessment of whether a discharge may (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective.

Santa Ana Water Board staff performed an RPA for metals from existing Dischargers covered by Order No. R8-2007-0041. Data used for this analysis consisted of:

Effluent Data: Metals data were available from the Irvine Ranch Water District (IRWD) discharges from four groundwater wells (72, 78, ET-1 and ET-2), and from the Michelson Water Reclamation Plant (MWRP) dewatering operation. Data from the past five years (2014 to 2019) were assessed.

Receiving Water Data: The County of Orange’s WYLSED monitoring station in Peters Canyon Wash was used to define the minimum receiving water hardness (137 mg/L as calcium carbonate).

Ambient/Background Water Quality Data: The County of Orange’s CICF25 monitoring station in the Central Irvine Channel to define the ambient/background metals concentrations.

Data for the receiving water and ambient/background locations were obtained from annual reports submitted by the County of Orange pursuant to the area-wide Municipal Separate Stormwater System (MS4) permit for Orange County (Order No. R8-2009-0030). Three years of data were used: 2015/16 through 2017/18.

Following SIP procedures, Santa Ana Water Board staff identified the maximum effluent concentration (MEC) and maximum background (B) concentration for each metal and compared this information to the most stringent applicable water quality criterion (C).

c. Reasonable Potential Determination

The RPA resulted in the identification of copper and mercury as needing effluent limitations (Table 4).

Table 4: Reasonable Potential Analysis for Metals

Constituent	C ¹ (µg/L)		MEC (µg/L)	B (µg/L)	Reasonable Potential
	Dissolved	Total Recoverable	Total Recoverable	Dissolved	
City of Irvine					
Arsenic	150	150	25.4	5.4	No
Irvine Ranch Water District					
Arsenic	150	150	30	5.4	No
Cadmium	2.8	3.2	0.819	15	No
Chromium III	230	270	< 0.01	--- ²	No
Chromium VI	11	11	< 1.0	---	No
Copper	12	13	250	42	Yes
Lead	3.5	4.9	1.71	0.63	No
Mercury ^{3,4}	---	0.012	< 0.05	< 0.22	Yes
Nickel	68	70	7.68	6	No
Silver	5.9	7.3	< 0.028	< 0.2	No
Zinc	150	160	37.9	64	No
<u>Footnotes</u>					
1 Adjusted to receiving water hardness (137 mg/L) for hardness-dependent metal criteria					
2 "---" indicates no data available					
3 Mercury applicable objective from the 2017 Mercury Provisions					
4 Mercury objective and monitoring data are based on calendar year averages					
<u>Abbreviations</u>					
Most restrictive applicable water quality					
C	standard/criteria				
MEC	Maximum Effluent Concentration				
B	Maximum Ambient/Background Concentration				

4. WQBEL Calculations

The effluent limit calculation procedure specified in the SIP stipulates that the average monthly effluent limitation is set equal to the effluent concentration allowance (ECA). The ECA is a value derived from the water quality objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation (CV) for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in USEPA guidance (Technical Support Document for Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Where there is no mixing zone allowance and a CTR human health objective applies, the ECA is equal to the applicable human health objective. Therefore, in these circumstances, the average monthly effluent limit (AMEL) is equal to the human health objective. The SIP stipulates that where receiving waters are designated with the municipal water supply beneficial use (MUN), the human health objective for the consumption of water and organisms applies in calculating the effluent limitation; where the water is excepted from MUN, the human health objective for the consumption of organisms only applies. This Order includes effluent limits for discharges to receiving waters that are not designated MUN since all identified surface waters in the Newport Bay Watershed are excepted from the MUN beneficial use. For discharges to receiving waters, the AMELs were taken either from the CTR human health objectives for the consumption of organisms only or from the State Board's Division of Drinking Water's MCL.

Each AMEL was multiplied by a factor of 2.01 to determine the maximum daily concentration effluent limit. This factor is the average monthly effluent limit multiplier taken from the SIP. The multiplier corresponds to a coefficient of variation of 0.6 and a number of samples equal to four.

No mixing zone allowance is included in the calculation of effluent limits in this Order and, consequently, compliance with the effluent limits is required to be determined at the end of the discharge pipe for freshwater discharge. If a Discharger requests that a mixing zone allowance be included in the determination of appropriate effluent limits, a dilution model must be provided for approval.

This Order includes average monthly and maximum daily effluent limits (AMELs and MDELs) as required by federal regulations and the SIP. Effluent limits for selenium and metals were developed as described below.

a. Selenium Effluent Limits

Default selenium effluent limits and effluent limitations are shown on the first row of Table 5. Selenium effluent limits specific to discharges from the Irvine Ranch Water District (IRWD), based on coefficient of variation data from the past five years are also shown in Table 5. IRWD is currently the only active discharger enrolled in Order No. R8-2007-0041 that is currently required to monitor for selenium.

b. Metals Effluent Limits

For all metals other than mercury, the effluent limitations are based on the metals criteria in the California Toxics Rule (CTR). Mercury effluent limitations are based on the objectives in the Statewide Mercury Provisions adopted by the State Water Board in 2017.

The CTR expresses freshwater metal criteria for seven metals (cadmium, chromium III, copper, lead, nickel, silver, and zinc) as a function of hardness

(as CaCO_3) and provides an equation for calculating these criteria. This Order includes a tabulation of calculated effluent limitations for these metals corresponding to fixed hardness values ranging from 1 to 400 mg/L at 1 mg/L increments (Attachment J). The CTR specifies that a hardness of 400 mg/L should be used for all hardness values above 400 mg/L.

Federal regulations require that the effluent limits for metals be expressed as the total recoverable form. The State Implementation Policy (SIP) stipulates that in the absence of site-specific information, the conversion factors provided in the CTR should be used to translate effluent limits expressed as dissolved concentrations to effluent limits expressed as total recoverable concentrations. Because site-specific metal translators have not been developed for the Newport Bay Watershed, the CTR dissolved metals criteria are translated into total recoverable criteria using the equations provided in the CTR, and the total recoverable effluent limitations are then determined using the SIP procedures.

This Order implements the hardness-dependent metals criteria by requiring Dischargers to submit hardness values for their discharge that will be used in determining the appropriate numeric limit for that specific metal constituent(s) in the discharge. The fixed hardness value, which shall be based on the 5th percentile of effluent hardness measurements or the ambient receiving water hardness measurements (whichever is more restrictive), shall be determined and submitted for approval by the Executive Officer of the Regional Water Board. Upon approval of the hardness value for the discharge, the effluent limit for metals discharges to freshwater bodies is determined from the table.

The CTR saltwater metals criteria apply for direct discharges to Newport Bay (except for mercury as described above). These criteria are not hardness-dependent.

Step 6 of the permit limit calculation procedure specified in the SIP stipulates that the average monthly effluent limitation is set equal to the effluent concentration allowance⁴. Where there is no mixing zone allowance and a CTR human health objective applies, the effluent concentration allowance is equal to the applicable human health objective. Therefore, in these circumstances, the average monthly limit (AML) is equal to the human health objective.

⁴ *The EFFLUENT CONCENTRATION ALLOWANCE (ECA) is a value derived from the water quality objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (L TA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in USEPA guidance (Technical Support Document for Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).*

The SIP stipulates that where receiving waters are designated with the municipal water supply beneficial use (MUN), the human health objective for the consumption of water and organisms applies in calculating the effluent limitation. Where the water is excepted from MUN, the human health objective for the consumption of organisms only applies. All surface waters in the Newport Bay Watershed are excepted from the MUN beneficial use, therefore, only human health objectives for the consumption of organisms only were used in calculating effluent limitations.

For discharges to receiving waters, the AMELs were taken either from the CTR human health objectives for the consumption of organisms only or from MCL's established by the State Water Board.

Table 6 below shows the calculations for deriving effluent limitations for metals that are not hardness dependent, including other constituents for freshwater discharges.

Effluent limitations for hardness dependent metals for freshwater discharges are tabulated in Attachment J of this Order. Table 7 shows the calculations for deriving effluent limitations for metals for saltwater discharges.

Mercury. This Order implements the statewide water quality standards for mercury that were adopted by the State Water Board in 2017 as an amendment to the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries in the State of California (mercury provisions). The mercury provisions establish human health and wildlife objectives based on methylmercury concentrations in fish tissue. The provisions also include a fish tissue water quality objective for protection of the endangered California least tern that is applicable to Upper Newport Bay.

Chapter IV.D.2 of the mercury provisions translate the methylmercury tissue objectives into water column concentrations for use in reasonable potential analyses and development of effluent limitations. Regional Water Board staff have determined that the applicable water column concentration from the mercury provisions is 12 nanograms per liter (ng/L) for total mercury because. For freshwater this determination is based on the applicability of the 12 ng/L concentration to flowing water bodies (such as creeks and streams), and the applicability of either or both of the wildlife habitat (WILD) or the rare, threatened or endangered species habitat (RARE) to freshwater streams in the Newport Bay Watershed. For saltwater this determination is based on the applicability of the 12 ng/L concentration to waters with tidal mixing (such as upper and lower Newport Bay), and the applicability of one or more of the WILD, RARE, commercial and sportfishing (COMM), and marine habitat (MAR) beneficial uses to Upper Newport Bay and to Lower Newport Bay. There are currently no tribal-related beneficial uses that have been established in the Newport Bay Watershed.

Table 5: Calculated Freshwater Selenium Effluent Limitations

Discharger	CTR Freshwater Chronic Criteria for Selenium (µg/L)	Coefficient of Variation	Effluent Limits (µg/L)	
			Daily (MDEL)	Monthly (AMEL)
Default	5	0.6	8.2	4.1
IRWD Well 72	5	0.138	5.8	4.8
IRWD Well 78	5	0.348	7.0	4.5
IRWD Well ET-1	5	0.196	6.2	4.7
IRWD Well ET-2	5	0.324	6.9	4.5
IRWD Michelson Plant Dewatering	5	0.580	8.1	4.1

5. Whole Effluent Toxicity

This Order does not specify numeric WET limits. However, this Order requires that the discharge shall not result in acute toxicity in ambient receiving waters. The effluent is deemed to cause acute toxicity when the toxicity test of 100% effluent as required in monitoring and reporting program, results in failure of the test as determined using the pass or fail test protocol specified in Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms (EPA/821-R-02-012, October 2002).

D. Best Professional Judgement-Based Effluent Limitations

The applicable limits for oil and grease, total petroleum hydrocarbons, toluene, ethylbenzene, xylenes, chloroform, 1,2-dichloroethylene and naphthalene are carried over from Order No. R8-2007-0014 and are based on Best Professional Judgment (BPJ).

Since 1991, the same effluent limits for 1,2-dichloroethylene have been included in permits regulating these discharges. However, in 2003, effluent limitations for the two isomers (cis and trans) that make up 1,2-dichloroethylene were added. To avoid triggering the anti-backsliding provisions of the federal regulations, the effluent limitations for 1,2-dichloroethylene are retained, with the specific condition that the sum of the isomers cis-1,2-dichloroethylene and trans-1,2-dichloroethylene shall not exceed the effluent limitations for 1,2-dichloroethylene.

This Order specifies limits for methyl isobutyl ketone (MIBK), tert butyl alcohol (TBA), perchlorate and methyl ethyl ketone (MEK) that are the same as those specified in Order No. R8-2007-0041 and were based on notification levels identified by the California Department of Public Health/Office of Environmental Health Hazard Assessment (OEHHA). In the case of MEK, the notification level is for methyl isobutyl ketone (MIBK), which is in the same class of liquid organic compounds as MEK.

This Order specifies a limit of 1 µg/L for 1,4-dioxane based on a new notification level (NL) developed by OEHHA in November 2010.

E. Discharge Specifications

Discharge limitations are included in this Order for those other chemicals of concern that typically pollute groundwater at service stations and similar sites within the San Diego Creek/Newport Bay watershed. In addition, the monitoring program includes analyses for additional constituents to determine the overall impact of individual discharges and to screen for unexpected chemicals.

Discharge Limitations established by this Order require authorized Dischargers to compare effluent data, generated through routine monitoring, to effluent limitations. Exceedance of any of the specified effluent limitations may trigger mandatory minimum penalties, accelerated monitoring for certain constituents and may lead to discontinuance

of coverage under this General Permit. The Discharge Specifications impose specific effluent limitations, assuring that authorized discharges are not creating adverse impacts on receiving water quality. When adverse impacts are highlighted following exceedance of

an effluent limitation(s), Dischargers are directed to confirm the findings, to mitigate impacts, to sewer or stop the discharge and/or to seek coverage under an individual NPDES permit.

F. Final Effluent Limitations

1. Satisfaction of Anti-Backsliding Requirements

With the exception of metals (in the entire watershed) and selenium (for direct discharges to Newport Bay) effluent limitations in this Order are at least as stringent as the effluent limitations in Order No. R8-2007-0041 and Order No. R8-2005-0079. See above discussion regarding Anti-Backsliding.

2. Satisfaction of Antidegradation Policy

Discharges in conformance with the requirements of this Order will not result in a lowering of water quality and therefore conform to antidegradation requirements specified in Resolution No. 68-16, which incorporates the federal antidegradation policy at 40 CFR §131.12 where, as here, it is applicable.

For discharges containing pollutants for which TMDLs have been established, the effluent limits in this Order implement TMDL WLAs applicable to the types of discharges covered by this Order.

3. Stringency of Requirements for Individual Pollutants

Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the CTR, the CTR is the

applicable standard pursuant to 40 CFR §131.38. The scientific procedures for calculating the individual water quality-based effluent limitations for priority pollutants are based on the CTR-SIP, which was approved by USEPA on May 18, 2000. Apart from certain standards changes resulting from the N/TDS Basin Plan amendment, all beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to §131.21 (c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

4. Basis and Summary of Final Effluent Limitations

The freshwater selenium effluent limits in Table 5 are based on the CTR and calculated using the SIP procedures, however, the applicability of these effluent limits, relative to subwatershed-specific or mass-based effluent limits, will be determined pursuant to the selenium TMDLs as described above in Sections IV.D.2 and V.C.2.d.

The reasonable potential analysis for metals in freshwater (Table 4) lists the CTR criteria that were applied and used as the basis for the calculated effluent limits in Table 6. The metal effluent limits for saltwater (Table 7) also lists the CTR criteria that were used. Both freshwater and saltwater effluent limits were calculated using SIP procedures.

Table 8 summarizes the effluent limitations for VOCs and other organic compounds and provides the basis for those limitations.

Table 6: Effluent Limitation Calculations: Non-Hardness-Dependent Metal Discharges to Freshwater (see Attachment J for hardness-dependent metals)

Constituent	CTR Criteria expressed as total recoverable		Human Health Criteria - Organisms Only (µg/L)	ECA Multiplier (CV=0.6)		LTA	LTA Multiplier (CV=0.6)		Effluent Limitation	
	Aquatic Life Criteria (µg/L)			Acute =0.321	Chronic =0.527		MDEL =3.11	AMEL =1.55		
	CMC	CCC		Acute LTA	Chronic LTA		MDEL (µg/L)	AMEL (µg/L)	MDEL (µg/L)	AMEL (µg/L)
Arsenic	340	150	---	109	79.1	79.1	246	123	246	123
Chromium VI	16	11	---	5.1	5.8	5.14	16.0	8.0	16	8.0
Mercury ^{2,3}	---	---	0.012	not applicable					0.012	
Selenium	---	5	---		2.6	2.6	8.2	4.1	8.2	4.1

Footnotes

- 1 "----" indicates no CTR criteria established
- 2 Mercury CTR criteria (0.051 µg/L) is replaced by objective from the 2017 Mercury Provisions
- 3 Mercury effluent limitation is expressed as a calendar year average

Abbreviations

- CTR California Toxics Rule
 ECA Effluent Concentration Allowance (equal to the Criteria when no dilution credits)
 CV Coefficient of Variation
 LTA Long Term Average
 MDEL Maximum Daily Effluent Limit
 AMEL Average Monthly Effluent Limit
 CMC Criterion Maximum Concentration (for acute exposure)
 CCC Criterion Continuous Concentration (for (chronic exposure)

Table 7: Effluent Limitation Calculations: Metal Discharges to Saltwater

Constituent	CTR Criteria (ug/L) expressed as total recoverable			ECA Multiplier (CV = 0.6)		LTA	LTA Multiplier (CV = 0.6)		Human Health Multiplier		Effluent Limitation (ug/L)	
	Saltwater Aquatic Life Criteria		Saltwater Human Health Criteria - Organisms Only	Acute 0.321	Chronic 0.527		MDEL 3.11	AMEL 1.55	MDEL 2.01			
	CMC	CCC		Acute LTA	Chronic LTA		MDEL	AMEL	MDEL		AMEL	MDEL
Arsenic	69	36	--- ¹	22.1	19.0	19.0	59	29	---	---	59	29
Cadmium	42	9.4	---	13.5	4.95	5.0	15	7.7	---	---	15	7.7
Chromium VI	1100	50	---	353	26.4	26.4	82	41	---	---	82	41
Copper	5.8	3.7	---	1.86	1.95	1.86	5.8	2.9	---	---	5.8	2.9
Lead	220	8.5	---	70.6	4.48	4.48	14	6.9	---	---	14	6.9
Mercury ^{2,3}	---	---	0.012	not applicable							0.012	
Nickel	75	8.3	4,600	24.1	4.37	4.37	14	6.8	9,246	4,600	14	6.8
Selenium	290	71	---	93.1	37.4	37.4	116	58	---	---	116	58
Silver	2.2	---	---	0.71	---	0.71	2.2	1.09	---	---	2.2	1.09
Zinc	95	86	---	30.5	45.3	30.5	95	47	---	---	95	47

Footnotes

- 1 "----" indicates no CTR criteria established
- 2 Mercury CTR criteria (0.051 µg/L) is replaced by the objective from the 2017 Mercury Provisions
- 3 Mercury effluent limitation is expressed as a calendar year average

CTR California Toxics Rule

ECA Effluent Concentration Allowance (equal to the criteria when no dilution credits are specified)

CV Coefficient of Variation

LTA Long Term Average

MDEL Maximum Daily Effluent Limit

AMEL Average Monthly Effluent Limit

CMC Criterion Maximum Concentration (for acute exposure)

CCC Criterion Continuous Concentration (for (chronic exposure)

Table 8: Basis and Summary of Final Effluent Limitations for VOCs and other Organics

Constituent	Current Limitations		MCL Limitations (µg/L)	Best Professional Judgment Limitations (µg/L unless specified otherwise)	CTR Limitations: Human Health: Organisms Only (µg/L)
	Maximum Daily Limit (µg/L)	Average Monthly Limit (µg/L)			
Benzene	2	1	[1]		71
Toluene	20	10	150	[10]	200,000
Xylenes	20	10	1,750	[10]	
Ethylbenzene	20	10	300	[10]	
Carbon Tetrachloride	1	0.5	[0.5]		4.4
Chloroform	10	5		[5]	
Dichlorobromomethane	10	5		[5]	46
Methyl Ethyl Ketone	241	120		[120]	
Methyl Isobutyl Ketone (MIBK)	241	120		[120*]	
Methyl Tertiary Butyl Ether (MTBE)	26	13	[13]		
Naphthalene	20	10	17*	[10]	
Tetrachloroethylene (PCE)	10	5	[5]		8.85
Trichloroethylene (TCE)	10	5	[5]		81
1,1-Dichloroethane	10	5	[5]		
1,1-Dichloroethylene	6.4	3.2	6		[3.2]
1,2-Dichloroethylene (sum of cis & trans)	20	10		[10]	
1,2-Dichloroethylene (cis)	12	6	[6]		
1,2-Dichloroethylene (trans)	20	10	[10]		
1,1,1-Trichloroethane (TCA)	10	5	200	[5]	
Tert Butyl Alcohol (TBA)	24	12		[12*]	
1,4-Dioxane	2	1		[1*]	
Perchlorate	8	4	6*	[4]	
1,2,3-Trichloropropane (TCP)	0.001	0.005	[0.005]		

*Note: Limits marked with * are Notification Levels; Limits in brackets [] are the criteria selected as effluent limits for this Order.*

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

CWC §§13267 and 13383 authorize the Santa Ana Water Boards to require technical and monitoring reports. 40 CFR §122.48 requires all NPDES permits to specify recording and reporting of monitoring results. The Monitoring and Reporting Program (MRP), Attachment E of this Order, establishes monitoring and reporting requirements to implement State and federal requirements.

The Executive Officer shall model individual Monitoring and Reporting Programs on that provided in Attachment E. However, the number of constituents to be monitored and the monitoring and reporting frequency may be modified on a case-by-case basis, based on the nature of the discharge being authorized. Revision of each individual monitoring and reporting program by the Executive Officer may be necessary to confirm that the Discharger is in compliance with the requirements and provisions contained in this Order. Revisions may be made by the Executive Officer at any time during the term of this Order, and may include a reduction or an increase in the number of constituents to be monitored, the frequency of monitoring, the number and size of samples collected, and the frequency for report submittal.

A. Influent Monitoring – Not Applicable

B. Effluent Monitoring

Dischargers are required to conduct monitoring of the permitted discharges in order to evaluate compliance with permit conditions and to allow ongoing characterization of discharges to determine potential adverse impacts and to determine continued suitability for coverage under the General Order.

In addition to discharge rate, effluent will typically be required to be monitored for selenium, nitrogen, TDS, pH, total suspended solids, total petroleum hydrocarbons, VOCs, sulfides and/or chlorine residual depending on the nature of the discharge.

Per- and polyfluoroalkyl substances (PFAS) are a large group of more than 3,000 synthetic organofluorine compounds that are used in the production of a wide range of industrial and household products. PFAS are persistent in the environment and highly mobile in water. The four major sources for PFAS are firefighting training/response sites, industrial sites, landfills, wastewater treatment plants/biosolids.

In August 2019, the State Water Board's Division of Drinking Water (DDW) established notification levels for perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) (6.5 parts per trillion for PFOS and 5.1 parts per trillion for PFOA). PFOS and PFOA are no longer manufactured or imported into the United States but remain in the environment due to historical use. Notification levels are a nonregulatory, precautionary health-based measure for concentrations in drinking water that warrant notification and further monitoring and assessment.

This Order does not include effluent limits for PFOA and PFOS monitoring because of the low potential for discharges covered by this Order to reach waters with the MUN beneficial use. All surface waters in the Newport Bay Watershed are excepted from the MUN beneficial use, and surface waters. Furthermore, in the central part of the Newport Bay watershed, groundwater discharges to freshwater streams are unlikely to percolate to the deep regional aquifer (the Irvine GWMZ) because of the presence of an intervening, poorly transmissive shallow groundwater zone. As described above (Section IV.C.1) this shallow groundwater zone is not designated as MUN and is poorly connected to the Irvine GWMZ. Most channels/streams in the central portion of the Newport Bay Watershed are excavated (or have eroded) below the shallow groundwater table and receive inflow from the shallow groundwater zone rather than recharging groundwater.

However, this Order does require PFOA and PFOS monitoring for discharges originating from groundwater. Monitoring of groundwater discharges to areas outside of the shallow groundwater zone is warranted because these compounds have been detected in a portion of the Irvine GWMZ. IRWD, a Discharger under Order No. R8-2007-0041, currently monitors PFAS in groundwater affected by a volatile organic contaminant plume that originated from the former Marine Corps Air Station (MCAS), El Toro. PFAS detected in groundwater is believed to have originated from a fire-fighting training area on former MCAS El Toro.

C. Whole Effluent Toxicity Testing Requirements

Whole effluent toxicity (WET) protects the receiving water quality from the aggregate toxic effect of a mixture of pollutants in the effluent. WET tests measure the degree of response of exposed aquatic test organisms to an effluent. The WET approach allows for protection of the narrative "no toxics in toxic amounts" criterion while implementing numeric criteria for toxicity. There are two types of WET tests: acute and chronic. An acute toxicity test is conducted over a shorter time period and measures mortality. A chronic toxicity test is conducted over a longer period of time and may measure mortality, reproduction, and growth.

The Basin Plan specifies a narrative objective for toxicity, requiring that all waters be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental response on aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alterations in population, community ecology, or receiving water biota.

This Order requires the Discharger to conduct acute toxicity testing of the effluent annually. This Order also requires the Discharger to conduct an Initial Investigation Toxicity Reduction Evaluation (TRE) program when the acute toxicity test fails. Based on a review of monitoring data, there have been instances in which acute test failures can be attributed to salinity additions required to conduct the test. When this situation occurs, the Discharger normally performs additional acute testing of the effluent coupled with testing for all the priority pollutants. If the additional acute testing still fails and the priority pollutant scan shows no pollutants at levels of concern, acute testing is stopped

and the acute test failure is presumed to be caused by ionic imbalance in the waste effluent (as described in relevant literature).

D. Receiving Water Monitoring

Many of the effluent limitations in this Order are not applicable if the effluent does not reach a flowing stream. Whenever there is a discharge and the Discharger asserts that the discharge percolated before it reached a stream with aquatic life, the Discharger is required to record in a permanent log the following information: (a) the date(s), time(s), and duration(s) of the discharge; (b) a description of the location where the discharge(s) percolated into the ground, (c) the climatic condition in the area during the discharge and (d) the name of the individual(s) who performed the observation.

For discharges that do reach a stream, the Discharger is required to make visual observations of the receiving water on a weekly basis for any visible oil sheen or coloration of the receiving water. The findings of these observations are required to be recorded in a permanent log.

In addition, dischargers with elevated selenium levels in their effluent, may need to undertake monitoring for selenium in receiving water as detailed in the MRP (Attachment E).

E. Reporting Requirements

Dischargers will be required to submit monitoring reports according to the schedule detailed in the MRP (Attachment E).

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR §122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR §122.42, are provided in Attachment D.

40 CFR §122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR §123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR §123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR §122.41(j)(5) and (k)(2) because the enforcement authority under the CWC is more stringent. In lieu of these conditions, this Order incorporates by reference CWC §13387(e).

B. Nutrient TMDL WLA Compliance Provisions

The compliance provisions in the Order are expected to result in attainment of the WLAs.

C. Selenium TMDL WLA Compliance Provisions

The compliance provisions in the Order are expected to result in attainment of the WLAs.

D. Special Provisions

1. Reopener Provisions

This provision is based on 40 CFR Part 123. The Santa Ana Water Board may reopen this Order to modify permit conditions and requirements. Causes for modifications include the promulgation of new regulations, or adoption of new regulations by the State Board or Santa Ana Water Board, including revisions to the Basin Plan.

VIII. PUBLIC PARTICIPATION

The Santa Ana Water Board is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) general permit for discharges to surface waters that pose an insignificant (de minimis) threat to water quality within the Santa Ana Region. The Santa Ana Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Santa Ana Water Board has notified current enrollees under Order No. R8-2007-0041 (as amended by Order No. R8-2009-0045), the City of Irvine (Order No. R8-2005-0079), and interested agencies and persons of its intent to replace these Orders with new general waste discharge requirements and has provided them with an opportunity to submit their written comments and recommendations. Notification was also provided through the posting of a copy of the tentative Order at the Santa Ana Water Board website:

http://www.waterboards.ca.gov/santaana/board_decisions/tentative_orders/index.shtml
on or before November 6, 2019.

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Santa Ana Water Board at the address above on the cover page of this Order.

C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: December 6, 2019
Time: 9:00 A.M.
Location: [City of Huntington Beach](#)
Council Chambers
2000 Main Street
Huntington Beach, CA 92648

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our web address <http://www.waterboards.ca.gov/santaana> where you can access the current agenda for changes in dates and locations.

A. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Santa Ana Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100
Sacramento, CA 95812-0100

B. Information and Copying

Related documents, comments received, and other information are on file and may be inspected at the address above at any time between 9:00 a.m. and 3:00 p.m. Monday through Friday. Copying of documents may be arranged through the Santa Ana Water Board by calling (951) 782-4130.

C. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Santa Ana Water Board, reference this facility, and provide a name, address, and phone number.

D. Additional Information

Requests for additional information or questions regarding this Order should be directed to Ryan Harris at (951) 320-2008.

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